

University of Pretoria Yearbook 2017

Molecular basis of disease 368 (BCM 368)

Qualification	Undergraduate
Faculty	Faculty of Natural and Agricultural Sciences
Module credits	18.00
Programmes	BSc Biochemistry BSc Biotechnology BSc Chemistry BSc Entomology BSc Genetics BSc Human Genetics BSc Human Physiology BSc Microbiology BSc Nutrition BSc Plant Science BSc Zoology
Prerequisites	BCM 251 and BCM 252 and BCM 261
Contact time	180 minute practical per week, 2 lectures per week
Language of tuition	Afrikaans and English is used in one class
Academic organisation	Biochemistry
Period of presentation	Semester 2

Module content

Normal and abnormal regulation of the cell cycle: The biochemistry of proliferation, quiescence, senescence, differentiation and apoptosis, illustrated by cancer. Host-Pathogen co-evolution: How adaptive immunity emerged from innate immunity. Infection: Molecular and cellular immunobiochemistry of protection against viral, bacterial and parasitic pathogens. Auto-immunity: Molecular mechanisms of the maintenance and failure of the recognition of foreign in the context of self in the mammalian body. Practical training includes debate on ethics of research on animal and human diseases, experimental design and execution of an immunoassay to test for a biomarker antibody of an infectious disease, tutorials to determine the performance of a diagnostic test for disease, including the principle of ROC curve analysis, positive and negative predictiveness, sensitivity, specificity and accuracy, applications of polyclonal and monoclonal antibodies for characterisation of disease with fluorescence, confocal and electron microscopy, flow cytometry and biosensors.

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